ClareVision
Network Video Recorder
Installation Guide

8-Channel NVR with PoE

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Contact information For contact information, see www.clarecontrols.com.

Note: The figures shown in this manual are for reference only. The appearance and interface of the device are subject to the actual model.

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NVR pre-installation

This NVR is highly advanced surveillance equipment that should be installed with care. Please take into consideration the following precautionary steps before installation of the NVR.

- Keep all liquids away from the NVR.
- Install the NVR in a well-ventilated and dust-free area.
- Ensure environmental conditions meet factory specifications.
- Install a manufacturer recommended HDD.

Package contents

1 X 8 channel NVR appliance

1 X AC power cord

1 X optical mouse

1 X remote control

1 X SATA hard drive cable

4 X small Phillips head screws

1 X technical bulletin: NVR Understanding Camera Capacity

NVR installation

When installing the NVR:

- Ensure there is ample room for audio and video cables.
- When routing cables, ensure that the bend radius of the cables are no less than five times than its diameter.
- Connect both the alarm and RS-485 cable.
- Ensure the NVR is grounded.
- Environmental temperature should be within the range of 14 to 131ºF (-10 to 55ºC).
- Environmental humidity should be within the range of 10% to 90%.

Hard disk installation (optional)

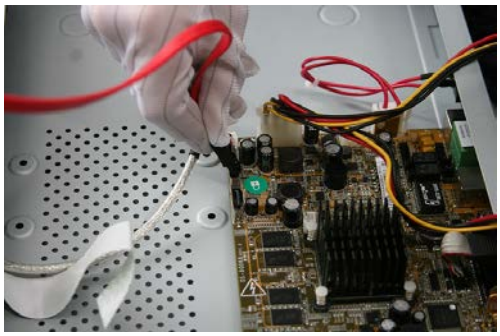
Additional SATA hard disks can be installed on the NVR. Disconnect the power from the NVR before installing a hard disk drive (HDD). A factory recommended HDD should be used for this installation.

Tools required: screwdriver.

To install the hard disk drive into the NVR:

1. Remove the cover from the NVR by unfastening the screws on the rear and side panels.

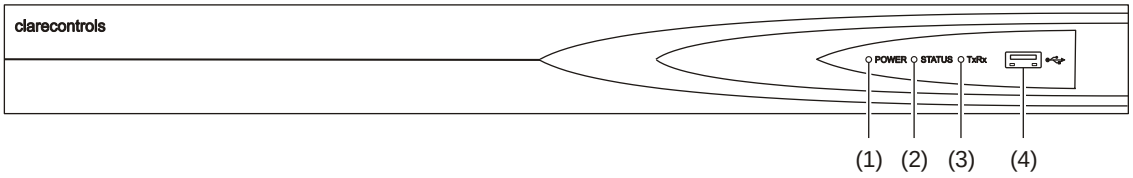
2. Connect one end of the data cable to the motherboard of NVR and the other end to the HDD.



3. Connect the power cable to the HDD.

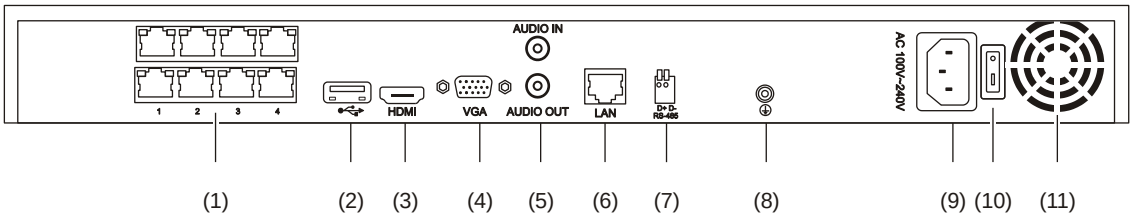
4. Place the HDD on the bottom of the device, and then fasten the screws on the bottom to affix the HDD.

Front panel



No.	Name	Description
1	Power	POWER: The POWER LED turns green when NVR is powered up.
2	Status	READY: The LED is green when the device is running normally.
		STATUS: 1. The light is green when the IR remote control is enabled. 2. The light is red when the function of the composite keys (SHIFT) are used. 3. The light is out when none of the above conditions are met.
		ALARM: The light is red when there is an alarm occurring.
		HDD: The LED flashes red when HDD is reading/writing.
3	Tx/Rx	TX/RX LED flashes green when network connection is functioning normally.
4	USB	USB connector

Rear panel



No.	Item	Description
1	Network Interfaces with PoE function	Network interfaces for the cameras and provides power over Ethernet.
2	USB	Connects USB disks and devices.
3	HDMI	HDMI video output connector.
4	VGA	DB9 connector for VGA output. Display local video output and menu.
5	AUDIO IN	BNC connector for audio input. (Also for two-way audio.)
	AUDIO OUT	BNC connector for audio output.
6	LAN Interface	1 network interface.
7	RS-485 Interface	Connector for RS-485 devices. T+ and T- pins connect to R+ and R- pins of PTZ receiver respectively.
8	Ground	Ground (needs to be connected before the NVR starts up).
9	Power Supply	12 VDC power supply.
10	Power Switch	Switch for turning on/off the device.
11	Fan	Removes heat from the device.

HDD storage calculation chart

The following chart shows an estimate of storage space used based on recording at one channel for an hour at a fixed bit rate.

Table 1: Storage calculation chart

Bitrate	Storage used
96 K	42 M
128 K	56 M
160 K	70 M
192 K	84 M
224 K	98 M
256 K	112 M
320 K	140 M
384 K	168 M
448 K	196 M
512 K	225 M
640 K	281 M
768 K	337 M
896 K	393 M
1024 K	450 M
1280 K	562 M
1536 K	675 M
1792 K	787 M
2048 K	900 M
4096 K	1800 M
8192 K	3600 M
16384 K	7200 M

Note: The values supplied for the storage space used are only for reference. The storage values in the chart are estimated by formulas and may be different from the actual value.

Startup

Proper startup procedures are crucial to expand the life of the NVR.

To start the NVR:

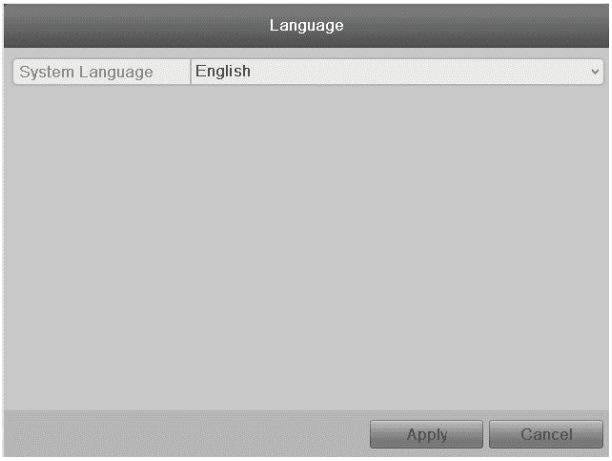
1. Check that the power supply is plugged into an electrical outlet. We highly recommend that you use an Uninterruptible Power Supply (UPS) in conjunction with the device.
2. Press the POWER button on the rear panel. The Power LED should turn green as the unit starts.

Using the Setup Wizard

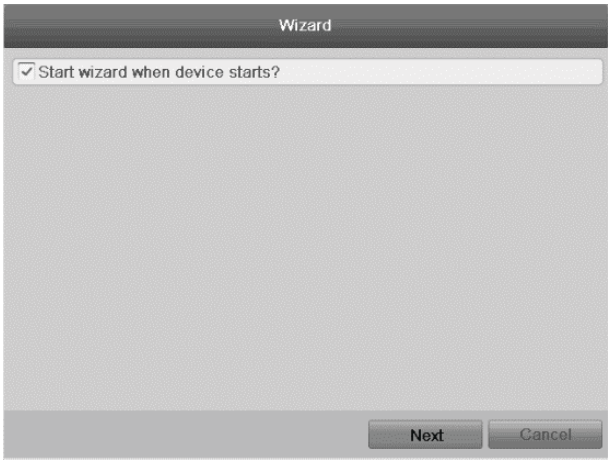
By default, the Setup Wizard starts once the NVR has loaded.

To operate the Setup Wizard:

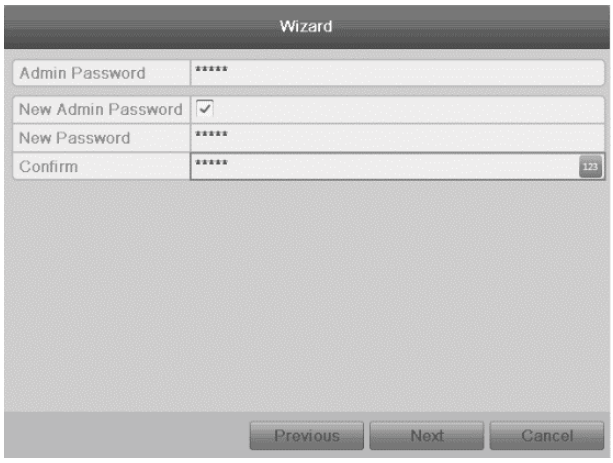
1. Select the system language from the drop-down menu, and then click **Apply** to save the resolution settings. The default language is English.



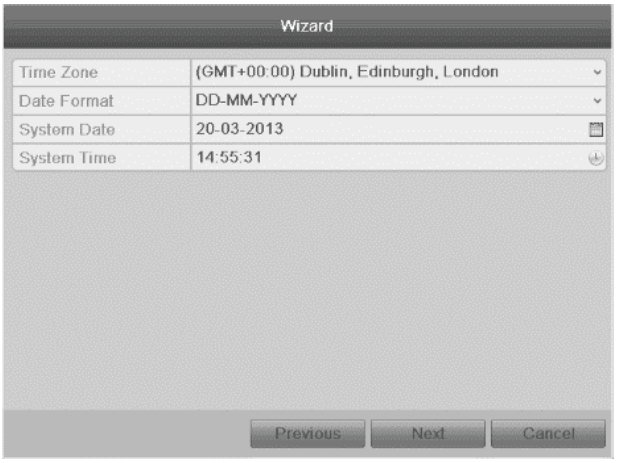
2. The Setup Wizard can walk you through the settings of the NVR. If you do not want to use the Setup Wizard, click **Cancel**. You can use the Setup Wizard the next time by selecting the **Start wizard when NVR starts?** checkbox.



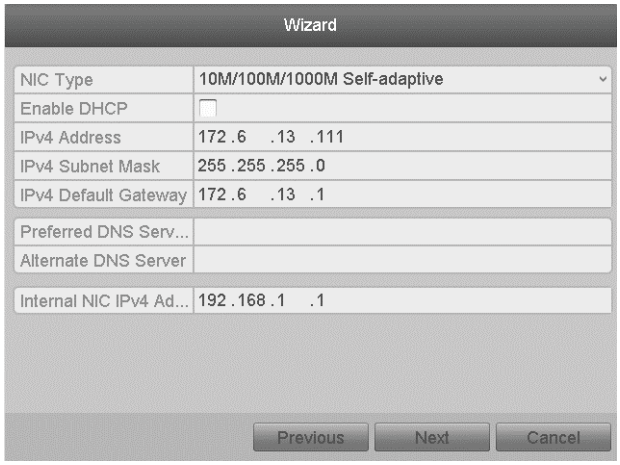
3. Click **Next** on the Wizard window to enter the Login window.



4. Enter the admin password. By default, this password is “secure7.”
5. To change the admin password, select the **New Admin Password** checkbox. Enter and confirm the new password in the given fields.
6. Click **Next** to enter the date and time settings window.

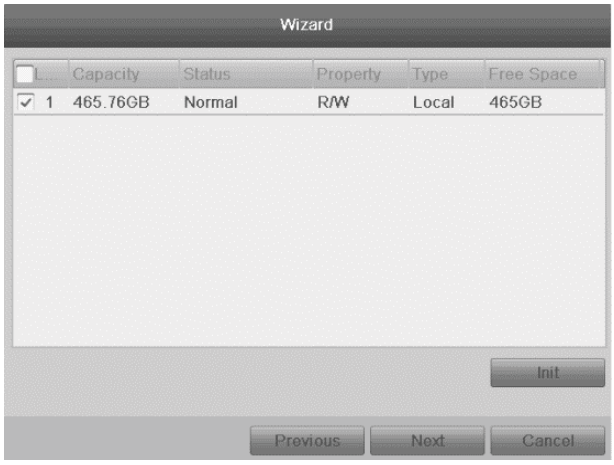


7. After the time settings, click **Next** to return to the Network Setup Wizard window.



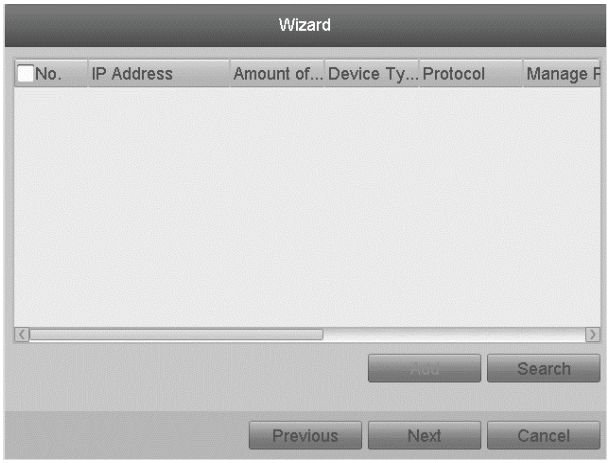
Note: The internal NIC IPv4 address must be on a separate subnet.

8. Click **Next** to enter the HDD Management window.



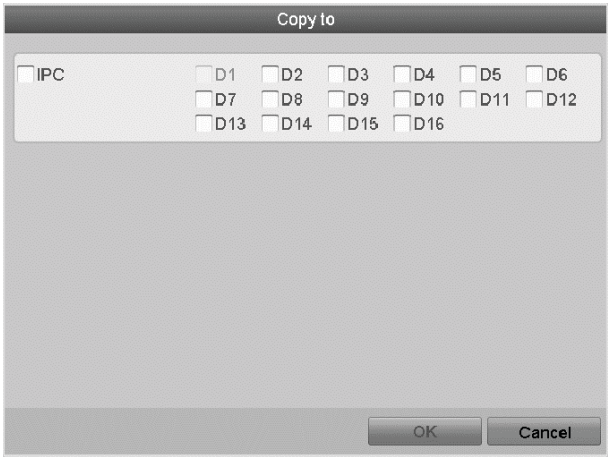
9. To initialize the HDD, click **Init**. Initialization removes all the data saved in the HDD.
10. Click **Next**. You will enter the Adding IP Camera interface.
11. Click **Search** to find the IP Camera.

12. Select the IP camera to be added, and then click **Add**.



13. Click the **Next** button. Configure the recording for the searched IP Cameras.

14. Click **Copy** to copy the settings to other channels.



15. Click **OK** to complete the Setup Wizard.

Live View

Some icons are provided on screen in Live View mode to indicate the different camera statuses. Icons appear at the top right of the screen for each channel. They show the status of the record and alarm features in the channel so that you can identify problems quickly.

Table 2: Live View icons

Icon	Description
	Alarm (video loss, tampering, motion detection, or sensor alarm)
	Record (manual record, schedule record, motion detection, or alarm triggered record)
	Alarm and Record

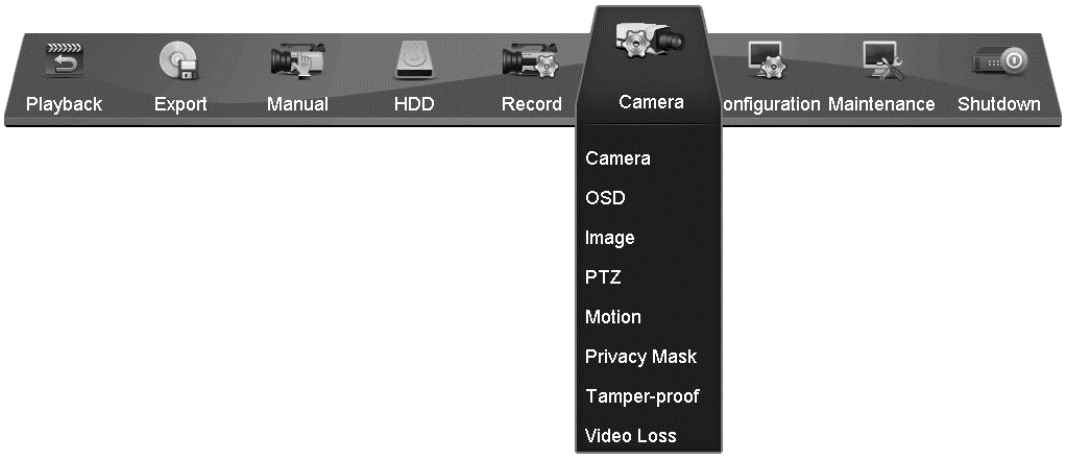
Adding and configuring IP cameras

Add and configure the online IP cameras to enable the live view and recording functions.

You can search and add the online IP cameras by using the Startup Wizard, or by following the steps below.

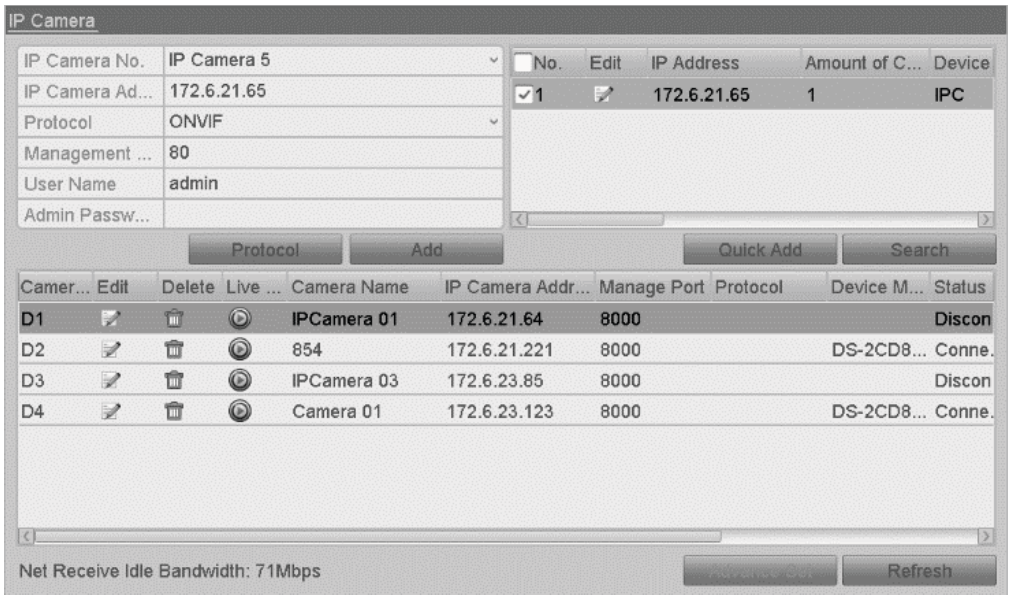
To add IP cameras:

1. Enter the Camera Management interface (Menu > Camera > Camera).



To add the online cameras with same network segment:

1. Click **Search** to search the online cameras.



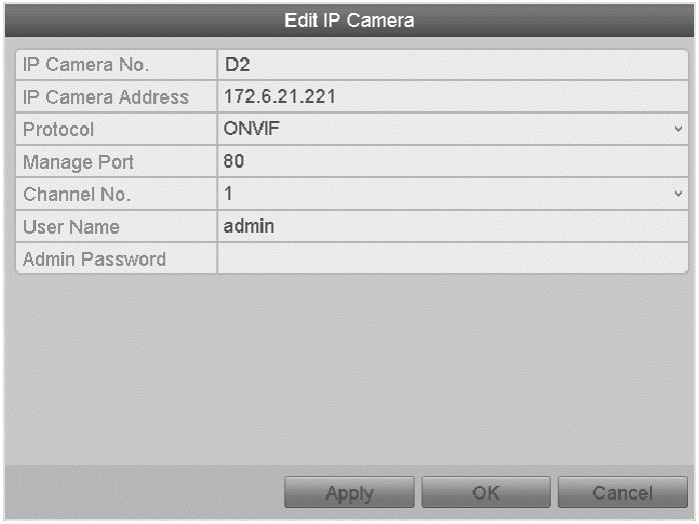
2. Select the checkboxes for the cameras to be added.
3. Click **Quick Add** to add the cameras.

Configuring basic parameters of IP cameras

After adding the IP camera, the basic information displays on the page. You can configure the basic parameters of the IP camera.

To configure or edit IP cameras:

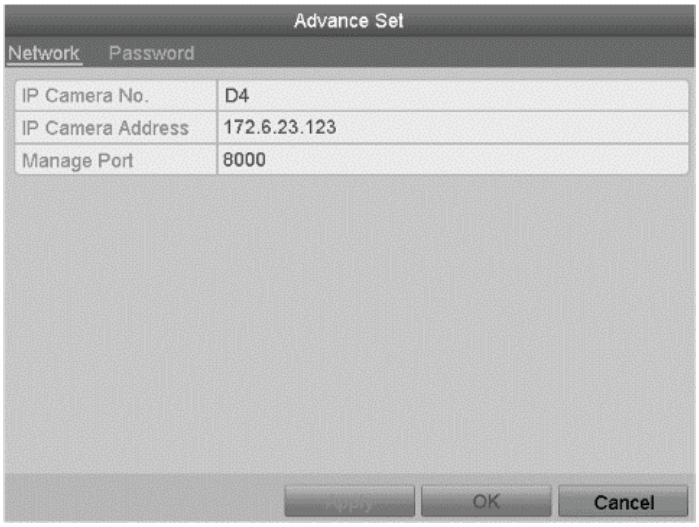
1. Click the icon to edit the parameters. You can edit the IP address, protocol, and other parameters seen below.



2. Click **Apply** to save the settings, and then click **OK** to exit the editing interface.

To edit more parameters:

1. Scroll to the right on the screen, and then click the **Advance Set** icon.



2. You can edit the network information and the password of the camera.
3. Click **Apply** to save the settings, and then click **OK** to exit the interface.

Table 3: Basic icons

Icon	Description
	Edit basic parameters of the camera
	Delete the IP camera
	Get the live view of the camera

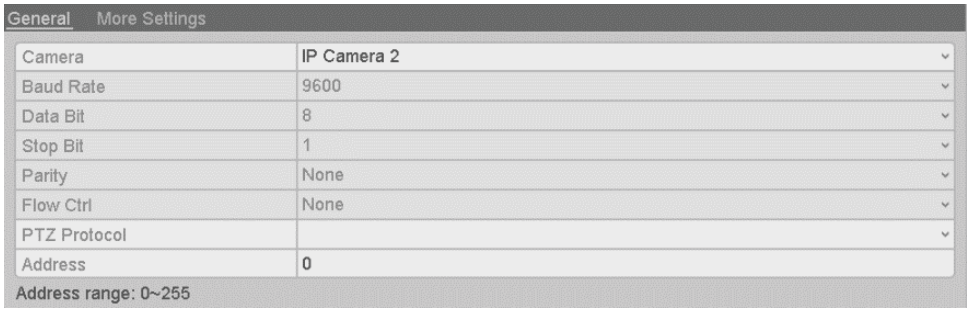
PTZ control

Follow the procedure to set the parameters for the PTZ. Configure the PTZ parameters before you set the PTZ camera. Before you begin, ensure the PTZ and the NVR are connected properly through the RS-485 interface.

PTZ settings

To set PTZ:

1. Enter the PTZ Settings interface (Menu > Camera > PTZ).



2. Choose the camera for PTZ setting next to the Camera label.
3. Enter the parameters for the PTZ camera.

   Note: All the parameters should be exactly the same as the PTZ camera parameters.
4. Click **Copy** to copy the settings for other PTZ cameras.
5. Click **Apply** to save and exit the interface.

PTZ control

In the Live View mode, press the PTZ Control button on the front panel, on the remote, or choose the PTZ Control icon to enter the PTZ panel.

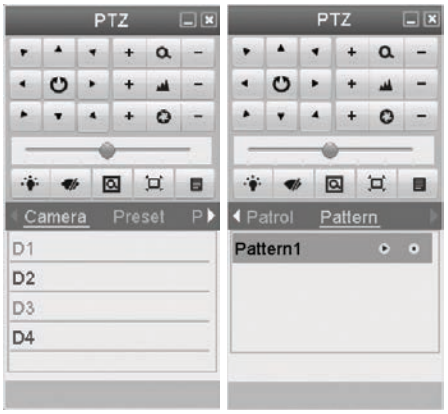


Table 4: PZT control icons

Icon	Description
	Direction button and the auto-cycle button
	The speed of the PTZ movement
	3 D-Zoom
	Patrol
	Previous item
	Stop the patrol or pattern movement
	Zoom+, Focus+, Iris+
	Light on/off
	Image Centralization
	Pattern
	Next item
	Minimize windows
	Zoom-, Focus-, Iris-
	Wiper on/off
	Preset
	Menu
	Start pattern/patrol
	Exit

Playback

Play back the record files of a specific channel in the Live View menu.

Instant playback by channel

Choose a channel under Live View using the mouse, and then click the button in the shortcut operation menu.

Note: Only the record files recorded during the last five minutes on the channel will be played back.

Playback by channel

To playback by channel:

1. Enter the Playback menu.

   Mouse: Right-click a channel in Live View mode and select from the menu.

   Front Panel: Press PLAY to play back the record files for the channel under a single-screen live view.

   Under the multi-screen live view, the record files of the selected channel will be played back.

   Note: Pressing the numeric buttons will switch playback to the related channels during the playback process.

Playback management

The toolbar at the bottom of the Playback interface can be used to control the playback process.

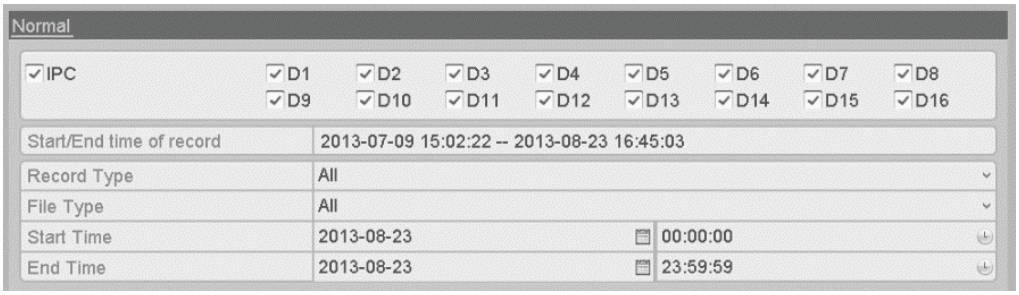
Check the channels if you want to switch playback to another channel or execute simultaneous playback of multiple channels.

Backup

Recorded files can be backed up to various devices, such as USB flash drives, USB HDDs, or a DVD writer.

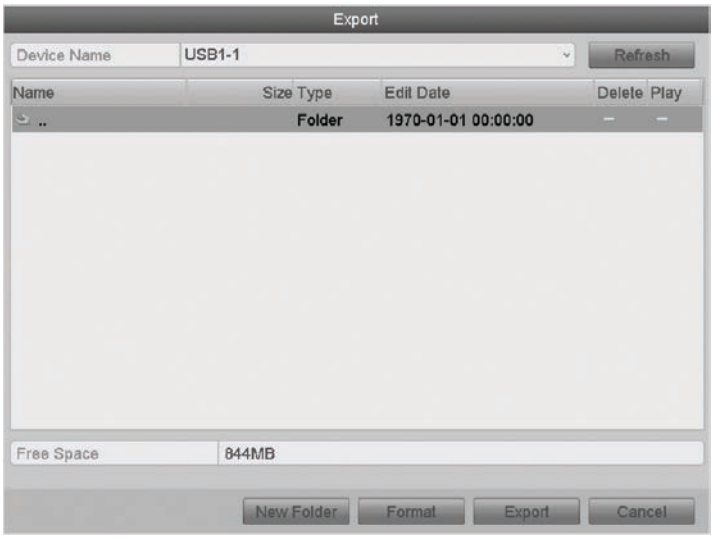
To back up recorded files:

1. Enter Video Export interface (**Menu** > **Export** > **Normal**).
2. Select the channels you want to back up, set search condition, and then click **Search** to enter the search result interface.

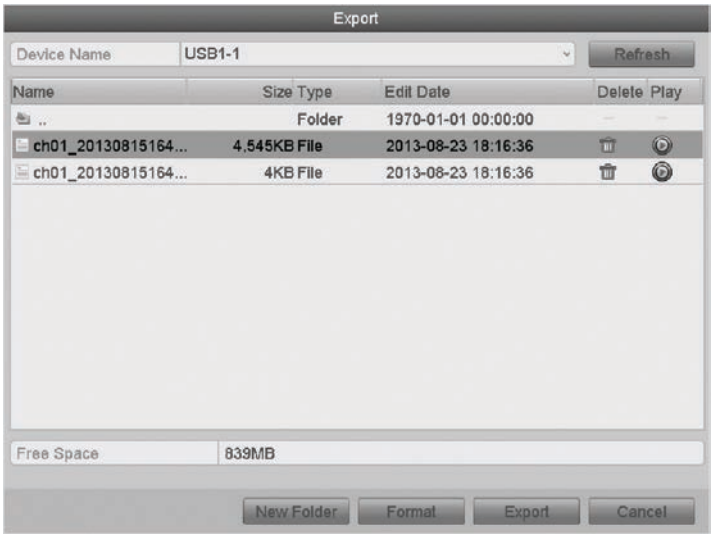


3. In the Search result interface, select the record files you want to back up and click **Export**.
4. Enter the Export interface, choose a backup device, and then click **Export** to start exporting.

Note: You can choose to export the record files or the related log files to the player.



5. Check the backup results. Choose the record file in the Export interface, and then press to check it.



Understanding camera capacity in an NVR

When setting up your NVR and cameras, you may notice that some of the camera images may not display in Live View. This most often occurs when you are displaying images in 1+5 mode, or 1+7 mode because the total bit rate for all cameras is exceeding the NVR's capacity. The actual capacity depends on the total bit rate from all the cameras. However, it is good practice to allow some headroom for machine operations, such as remote streaming.

NVR model	Capacity
4-channel	20 Mb
8-channel	40 Mb
16-channel	80 Mb
32-channel	160 Mb
64-channel	160 Mb

To fully understand NVR capacity, it is necessary to understand the concepts of streaming video, resolution, quality, and bit rate. Streaming video is content sent in compressed form over a network and processed in real time, that is, as it is received.

Streaming video types

- Main Stream: the high quality video that is being recorded and may be streamed.
- Sub Stream: never recorded; intended for streaming only. Default is 704 × 480, 584 Kbps at 8 fps.
- Can be video alone, or video and audio compressed together. Audio requires very little bandwidth.

The combination of the main stream and sub streams make up the total bit rate of each camera. This is expressed in Kbps (kilobits per second) or Mbps (megabits per second).

Bit rate is determined by the selected resolution (1280 × 720, 1920 × 1080, 2560 × 1920, etc.), frame rate (frames per second), and video quality (the amount of compression being applied to each camera).

Example

32 channels of 720P cameras at 15 fps with good image quality will have 32 x (1536 + 512) = 65536 Kbps (about 66Mbps), so the 32-channel NVR can support them.

Each channel can support a different camera, as long as they do not exceed the total bit rate limit. It is entirely possible to mix 5 MP cameras with 4CIF IP cameras, etc. Generally, 5 MP at 30 fps requires around 20 Mbps for best quality. A 4-channel NVR is currently limited to 16 Mbps.

Adjusting settings

Be aware of your NVR's capacity and make adjustments, if necessary. Adjust the bit rate by lowering the resolution, frame rate, or video quality setting.

To adjust the setting:

1. Enter the Live View settings interface.
2. Adjust the Resolution, Frame Rate, and Video Quality settings.

Specifications

Video/Audio input	IP video input	8-ch
	Audio in	1-ch, BNC (2.0 Vp-p, 1 kΩ) (two-way audio)
Video/Audio output	Recording resolution	5 MP/ 3 MP/ 1080 P/UXGA/720 P/VGA/ 4 CIF/DCIF/ 2 CIF/CIF/QCIF
	Frame rate	Main stream: 25 fps (P)/ 30 fps (N)
		Sub-stream: 25 fps (P)/ 30 fps (N)
	CVBS output	1-ch, BNC (1.0 Vp-p, 75 Ω) Resolution: 704 × 576 (PAL); 704 × 480 (NTSC)
	HDMI output	1-ch, resolution: 1920 × 1080P/ 60 Hz, 1920 × 1080P/ 50 Hz, 1600 × 1200/ 60 Hz, 1280 × 1024/ 60 Hz, 1280 × 720/ 60 Hz, 1024 × 768/ 60 Hz
	VGA output	1-ch, resolution: 1920 × 1080 P/ 60 Hz, 1600 × 1200/ 60 Hz, 1280 × 1024/ 60 Hz, 1280 × 720/ 60 Hz, 1024 × 768/ 60 Hz
	Audio output	1-ch, BNC (Linear, 600 Ω)
	Playback resolution	5 MP/ 3 MP/ 1080P/ UXGA/ 720P/ VGA/ 4 CIF/ DCIF/ 2 CIF/ CIF/ QCIF
	Synchronous playback	8-ch
Hard disk	SATA	2 SATA interfaces
	Capacity	Each interface supports up to 4 TB for recording
External interface	Network interface	1 RJ-45 10/ 100/ 1000 Mbps self-adaptive Ethernet interface
		8 independent 100 Mbps PoE network interfaces
	Serial interface	RS-232, RS-485
	USB interface	2 (USB 2.0)
	Alarm in	4
	Alarm out	2
Other	Power supply	100 to 240 VAC, 6.3 A, 50 to 60 Hz
	Consumption (without hard disk or DVD-R/W)	≤ 35 W
	Working temperature	-10 to +55˚C
	Working humidity	10 to 90%
	Chassis	19 inch rack-mounted 1 U chassis
	Dimensions (W × D × H)	445 × 261 ×44.5 mm
	Weight	≤ 8.82 lb. (4 Kg) (without hard disk or DVD-R/W)

Regulatory information

DISCLAIMER

Underwriters Laboratories Inc. (UL) has not tested the performance or reliability of the security or signaling aspects of this product. UL has only tested for fire, shock or casualty hazards as outlined in UL's Standards for Safety, UL60950-1. UL Certification does not cover the performance or reliability of the security or signaling aspects of this product. UL MAKES NO REPRESENTATIONS, WARRANTIES OR CERTIFICATIONS WHATSOEVER REGARDING THE PERFORMANCE OR RELIABILITY OF ANY SECURITY OR SIGNALING RELATED FUNCTIONS OF THIS PRODUCT.

FCC This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CE This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the Low Voltage Directive 2006/95/EC, the EMC Directive 2004/108/EC, the RoHS Directive 2011/65/EU

2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see www.recyclethis.info.

2006/66/EC (battery directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see www.recyclethis.info.

Contact information

Clare Controls, Inc.
7519 Pennsylvania Ave, Suite 104
Sarasota, FL 34243
Support: 941.404.1072
Fax: 941.870.9646
http://support.clarecontrols.com

www.clarecontrols.com